10 | PTSD and Medical Comorbidity

RACHEL KIMERLING
GRETCHEN CLUM
JOY McQUERY
PAULA P. SCHNURR

Much research has documented the subjective and objective impairments in health status among individuals exposed to trauma and those diagnosed with posttraumatic stress disorder (PTSD). Readers are referred to several excellent reviews for an overview of this literature (Friedman & Schnurr, 1995; Koss, Koss, & Woodruff, 1991; Resnick, Acierno, & Kilpatrick, 1997; Schnurr & Jankowski, 1999). The purpose of this chapter is to explore the extent to which gender moderates the observed relationship between traumatic stress and impaired health status. Previous chapters of the book document gender differences in exposure to trauma over multiple domains and in multiple contexts. We now investigate the extent to which the effects of exposure are experienced and embodied by men and women in different ways. We then provide a preliminary exploration of pathways that may account for any gender differences observed. Our goal is to use our understanding of these issues to inform prevention interventions and health services for both men and women with PTSD.

WHY EXAMINE GENDER AND HEALTH OUTCOMES?

The prevailing view of gender and health status has long been encapsulated as "women get sick and men die." This statement refers to consistent gender differences found for morbidity and mortality. Mortality statistics for the United States suggest that women have a longer lifespan than men, living, on average, 6 years longer (Centers for Disease Control and Prevention, 1999). This survival advantage for women is observed in nearly every

country in the world (Kinsella & Gist, 1998). Conversely, women experience greater lifetime rates of medical morbidity than men (Nathanson, 1977). The specific nature of these health conditions and the mechanisms associated with excess morbidity in women depend on a variety of social factors and are only broadly understood. In general, this research suggests that gender differences in health status result from a complex interaction between biological and social conditions. This means that when considering the health status of men and women, either gender may appear to have a health advantage, depending on the social group examined in the research study or the health outcome used as an indicator of health status. Considering the complexities involved in interpreting research on health status among the general population of men and women, it seems almost impossible to understand truly the relationship between PTSD and health status without accounting for gender. To fully explore the role of gender in the health status correlates of PTSD, our hope is that future research will address the broad influences of the biological, behavioral, and social aspects of gender. As a preliminary step toward accounting for gender in an effort to increase the understanding of the relationships among trauma, PTSD, and health status, the current chapter aggregates the literature of PTSD and health by gender of the participants. The pattern of results that we observe address several questions regarding gender, PTSD, and health that can guide future clinical research studies and clinical interventions.

OVERVIEW

This chapter is structured to review systematically the literature concerning the relationship of both PTSD and trauma exposure with health outcomes. Attention to gender in this field is in the early stages, and to date, few studies of trauma and PTSD have compared women and men for health status. In order to form hypotheses regarding gender, we highlight the few studies that have compared women and men, and discuss these results in the context of the research literature that has investigated health outcomes among both men and women. Because few studies have directly assessed morbidity and mortality among men and women with PTSD, we highlight these data and draw conclusions regarding the results with reference to the considerable literature on self-reported physical symptoms and self-rated health status. We conclude with a focus on research conducted with individuals diagnosed with specific conditions: gastrointestinal disorders, chronic pain, and sexually transmitted diseases. Significant research into these specific conditions has addressed their relationship to trauma and PTSD; however, these results and the concomitant gender issues are rarely examined in the context of the broader literature concerning PTSD and health status.

PTSD AND MEDICAL MORBIDITY

Studies Comparing Men and Women

To our knowledge, no published studies to date have directly compared women and men for the extent or type of medical comorbidity attendant with a diagnosis of PTSD. Research is only beginning to document the medical comorbidity with PTSD; however, an analysis of existing data can illuminate populations and diagnoses in need of further investigation. Most of the research has been conducted with samples of men and has utilized veteran samples. Some researchers have noted that because veterans are screened for health problems before entering the military, military samples may be healthier than representative community samples. This greater homogeneity in health status has the potential to obscure some of the relationships between trauma and health (Schnurr, 1996). Thus, the associations between PTSD and increased rates of medical morbidity observed in these populations may be more pronounced in nonveteran samples.

The National Vietnam Veterans Readjustment Study (NVVRS), a large representative sample of 1,632 male and female Vietnam veterans, has yielded informative results regarding the association between PTSD and self-reported health outcomes. The analyses did not directly compare women to men, but identical analyses were conducted separately for women and men. Results can serve as preliminary estimates that the relationship between PTSD and health conditions is comparable for women and men. Both female and male Vietnam Theater veterans with a current diagnosis of PTSD reported a greater number of active chronic physical health conditions and poorer self-rated health than their counterparts without PTSD (Kulka, Schlenger, & Fairbank, 1990).

Studies of Men

Most of these studies have examined medical morbidity after controlling for other factors also associated with health outcomes, such as age, behavioral risk factors, and socioeconomic status. These well-controlled studies are important to this literature, because they provide inroads in examining the unique contribution of PTSD to health outcomes. The data suggest that PTSD may be associated with increased rates of medical morbidity. A study of 327 male combat veterans seeking trauma-related mental health treatment assessed participants using standardized questionnaires and medical chart review (Beckham et al., 1998). Veterans with PTSD suffered from more health conditions according to both physician and patient self-report than did veterans without PTSD. This association persisted after controlling for age, socioeconomic status, minority status, combat exposure, alcohol use, and cigarette pack-year history. In addition, more severe PTSD was

associated with poorer health as assessed by both physician and patient self-report.

The observation of a greater number of health conditions may indicate an increased frequency of specific disease states related to PTSD. A longitudinal analysis of a community sample of 605 older male veterans of World War II and the Korean War examined health status via physical exam. In these data, even after accounting for factors predictive of health status, such as age, smoking, alcohol use, and body weight at study entry, PTSD symptoms were associated with an increased risk for onset of several categories of physician-diagnosed medical problems common to older males: arterial, lower gastrointestinal, dermatological, and musculoskeletal disorders (Schnurr, Spiro, & Paris, 2000).

Self-reported morbidity data are similar. One of the largest studies of the physical and mental health of male veterans is the Centers for Disease Control (CDC) Vietnam Experience Study, a telephone survey of over 7,000 male veterans who served during the Vietnam War era (1988). A follow-up study of these participants examined the medical histories of 1,399 men approximately 20 years following combat exposure (Boscarino, 1997). A lifetime diagnosis of PTSD was associated with increased risk for a variety of chronic medical disorders. Risk was specifically increased for heart/circulatory disorders, nonsexually transmitted infectious disease, musculoskeletal disorders, digestive conditions, respiratory disorders, endocrine/metabolic conditions, and nervous system disorders. These analyses controlled for a number of factors thought to affect reporting of the onset of illness, including intelligence, race, region of birth, enlistment status, army medical profile, hypochondriasis, age, smoking, substance abuse, education, and income. The investigators also examined the effects of depression and other anxiety disorders, and found that PTSD was more strongly associated with health outcomes than were other psychiatric disorders, although they did not account for comorbidity among disorders. Nonveteran samples have been studied with less frequency, but those studies that exist are consistent with the veteran literature. For example, a study of Australian firefighters found that subjects with PTSD suffered more cardiovascular, respiratory, musculoskeletal, and neurological symptoms than those without a history of PTSD (McFarlane, Atchison, Rafalowicz, & Papay, 1994). Similar results were observed among a random sample of 363 military veterans exposed to mustard gas during World War II, in which men with PTSD reported more chronic health problems than did men without PTSD (Schnurr, Ford, et al., 2000).

Researchers have further investigated the specific association of PTSD with cardiovascular health among male veterans. In the CDC Vietnam Experience Study, chronic PTSD was associated with electrocardiogram (EKG) abnormalities, atrioventricular defects, and infarctions (Boscarino & Chang, 1999). Although depression and anxiety were also associated

with positive EKG findings in these data, the association between PTSD and EKG abnormalities remained after controlling for these comorbid conditions. The analyses also accounted for factors related to coronary heart disease, including age, ethnicity, education, location of service, medications, drug and alcohol use, body mass index, and cigarette smoking. Another study found that Israeli veterans with combat-related PTSD demonstrated poorer performance on laboratory stress tests when compared to noncombat veterans, although no differences were observed in heart rate, blood pressure, or physical exam findings (Shalev, Bleich, & Ursano, 1990a). This study also controlled for behavioral risk factors for cardiovascular disease, including smoking and substance abuse.

Studies of Women

To date, few published studies have examined the relationship between PTSD and medical comorbidity specifically among women. No studies have yet examined objectively documented medical morbidity. Self-report of morbidity was assessed in a study of 109 female Vietnam veterans (Wolfe, Schnurr, Brown, & Furey, 1994). Women with PTSD were more likely to report current health problems, specifically, cardiovascular, gastrointestinal, gynecological, dermatological, opthalmological, and pain problems. These self-reported health problems were associated with PTSD even when war-zone exposure was controlled.

Discussion

Clearly, more data are needed to describe the extent of medical comorbidity with PTSD and to examine associated gender issues. Studies of men suggest that PTSD may be associated with increased risk of morbidity, and that cardiovascular, musculoskeletal, and gastrointestinal disorders may merit specific investigation. Are women with PTSD at risk for similar medical problems? Cardiovascular disease, for example, is the leading cause of death among women in the United States (Centers for Disease Control and Prevention, 1999). Unfortunately, the misperception that this disease is not a serious concern for women has resulted in a less assertive approach to research and treatment (Welty, 2001). In the past decade, medical research that has begun to address gender-specific risk factors and diagnostic procedures for cardiovascular disease can inform the methodology and design of studies examining the comorbidity of cardiovascular disease with PTSD among women. Researchers and clinicians must not conclude that medical disorders such as cardiovascular disease, gastrointestinal disorders, or musculoskeletal conditions are commonly comorbid with PTSD among men but not women, based on a lack of available empirical data. Instead, it is important to recognize the lack of research into women's health. More

research is needed to investigate the relationship between PTSD and health status among both civilian and veteran women. We now turn to a discussion of trauma exposure and medical morbidity in an effort to better inform the interpretation of the literature reviewed earlier.

TRAUMA EXPOSURE AND MEDICAL MORBIDITY

Studies Comparing Men and Women

Similar to the PTSD literature, the literature concerning trauma and medical morbidity has yet to examine gender differences in health outcomes comprehensively. One cross-sectional study using a convenience sample of 1,359 middle- to upper-middle-class older men and women assessed sexual assault history in relation to 10 chronic medical conditions that were objectively confirmed by physician diagnosis or medical chart review (Stein & Barrett-Connor, 2000). Sex-specific, age-adjusted odds ratios (ORs) for lifetime risk of disorder were calculated. For coronary heart disease, hypertension, diabetes, osteoporosis, obesity, asthma, migraine, arthritis, fractures, and breast or prostate cancer, sexual assault history was associated with increased risk of thyroid disease in men and breast cancer and arthritis in women. The authors note that these findings were unexpected and do not appear to stem from a common pathology. The absence of a representative sample and/or the potentially constrained statistical power to detect effects for specific diagnoses may have affected the results. Results should be interpreted in the context of similar studies conducted with single-sex samples, reviewed subsequently in this section.

One notably comprehensive study has examined medical morbidity following childhood trauma exposure and merits discussion, although men and women were not compared in the analyses. The Adverse Childhood Experiences Study examined 9,508 health maintenance organization (HMO) enrollees for experiences such as sexual, physical, or psychological abuse; exposure to interparental violence; or living in a household in which one member was a substance abuser, mentally ill, suicidal, or imprisoned. The conceptualization of exposure included stressors beyond those traditionally considered traumatic. Although severe adversity appeared to be overrepresented among women, health outcomes were not compared on the basis of gender. More severe adversity, as defined by the report of a greater number of adverse childhood conditions, was associated with increased risk for adult medical morbidity. More severe exposure was linked to an increased risk for heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease. The authors concluded that the effects of childhood adversity are so pronounced that such experiences should be considered a major risk factor for the leading causes of death among adults.

Studies of Men

The CDC Vietnam Experience Study compared veterans who served in the Vietnam theater and those who served in other locations to assess effects of combat exposure on health status (1988). Theater veterans reported more chronic medical problems than did Vietnam era veterans. When medical exams were performed with a subset of participants, theater veterans were found to have more hearing loss, lower sperm counts, and more abnormal sperm morphologies than era veterans. A similar study of Navy Vietnam veterans compared former prisoners of war (POWs) to a demographically matched group of veterans who were not POWs to examine the occurrence of medical diagnoses in the 14 years following military service (Nice, Garland, Hilton, Baggett, & Mitchell, 1996). Diagnoses were based on annual medical exams from 1976 to 1993. Investigators found that the POW group had a higher likelihood of disorders of the peripheral nervous system, joint problems, back problems, and peptic ulcer than non-POW veterans. The authors suggest that these illnesses may in large part be due to the physical effects of torture sustained during captivity.

Studies of Women

Several large studies have investigated medical morbidity in relation to trauma exposure among women. One of the largest studies of this type was an investigation of 1,225 randomly selected women subscribers of a large HMO. Women who reported childhood maltreatment compared to those without abuse histories revealed significantly higher rates of physician-diagnosed morbidity, including infectious disease, pain disorders, and other illnesses such as hypertension, asthma, or skin disorders. Medical charts of women who experienced multiple types of childhood maltreatment revealed the most diagnoses (Walker et al., 1999).

Studies of Women's Reproductive Health

A number of studies have specifically investigated the impact of trauma exposure on women's reproductive health. Although these data can not be compared to those obtained from men, the evidence of deleterious effects on reproductive health is an important facet of women's health that requires discussion. In a study of 191 women seen at an outpatient obstetrical/gynecological clinic, those who reported sexual, physical, or emotional abuse during childhood were more likely to be diagnosed with a gynecological disorder than nonabused women (Letourneau, Holmes, & Chasedunn-Roark, 1999). The disorders identified at higher rates in abused women

included sexually transmitted diseases (STDs), excessive bleeding, vaginitis, cervical dysplasia, dysmenorrhea, and infertility.

Recent data suggest that intimate partner violence during pregnancy may be one of the leading causes of morbidity and mortality among pregnant women (Fildes, Reed, Jones, Martin, & Barrett, 1992; Frye, 2001). A study of 1,203 racially diverse women participating in prenatal care assessed exposure to interpersonal violence and conducted a chart review for pregnancy complications and birth outcomes following delivery (Parker, McFarlane, & Soeken, 1994). Exposure to violence during pregnancy was associated with low maternal weight gain, infections, anemia, and a briefer interpregnancy interval. Another study of 384 low-income, pregnant women found that violence during pregnancy was associated with twice the risk for preterm labor and chorioamnionitis compared to nonexposed women (Berenson, Wiemann, Wilkinson, Jones, & Anderson, 1994). Analyses of a representative sample of 6,143 women demonstrated an association of violence during pregnancy with an increased risk for delivery by cesarean section and antenatal hospitalization for kidney infection, premature labor, or physical trauma (Cokkinides, Coker, Sanderson, Addy, & Bethea, 1999). It appears evident that a variety of adverse outcomes are associated with violence during pregnancy. Researchers suggest that research in this area investigate the specific role of partner violence in physical trauma-related outcomes, and that studies should also be designed to investigate the role of psychological reactions to violence and the association with health outcomes (Petersen et al., 1997).

Discussion

Similar to results found in the PTSD literature, more research is needed to draw conclusions about any gender differences in the relationship between trauma exposure and medical morbidity. However, data from the Adverse Childhood Experiences Study strongly suggest that increased risk for health problems following trauma exposure is a serious issue for both men and women. Similar to studies of PTSD and health problems, studies of both men and women suggest that risk is increased for a broad range of health conditions. Notable in this literature is that both men and women appear to be at increased risk for reproductive health problem following trauma exposure, although the issue has been more extensively researched with women. Research that investigates PTSD diagnoses in conjunction with trauma exposure and reproductive health is needed. Such research would help to delineate how these reproductive health conditions are associated with characteristics of the trauma exposure and the extent to which the stress reactions to the trauma, PTSD, are associated with these conditions.

TRAUMA, PTSD, AND MORTALITY

The following review of mortality studies suggests that both trauma and PTSD have a negative impact on health, and that some aspects of the way trauma impacts health status may differ in men and women. Studies of all-cause mortality can serve as gross measures of the extent of health impairment associated with PTSD, whereas data that include cause of death can serve as a context for interpreting the morbidity studies previously reviewed.

Studies Comparing Men and Women

One study has investigated the relationship between exposure to trauma and mortality outcomes in a sample including both males and females. Sibai, Fletcher, and Armenian (2001) conducted a 10-year follow-up of 1,567 men and women exposed to war-related stressors in Lebanon. Increased numbers of war-related stressors were associated with increased risk for both cardiovascular disease-specific deaths and all-cause mortality. Although the data could not attest to differential rates of premature mortality following traumatic exposure, gender differences were found in the relationship between type of exposure and mortality risk. Both men and women displaced by war-related events showed the greatest mortality risks. For women, the experience of loss-related trauma was also associated with heightened mortality risk. These data attest to a potentially profound impact of traumatic exposure on health outcomes.

Studies of Men

Several studies suggest that exposure to trauma and PTSD is linked to early mortality among men, although primarily due to accidents and suicide. One of the largest studies of this type is a study of 16,257 male Vietnam veterans whose names were obtained from the Agent Orange Registry. The investigators compared mortality data of veterans with and without PTSD, and those of both groups to standardized mortality ratios for U.S. males (Bullman & Kang, 1994). Veterans with PTSD were almost four times more likely to die from suicide, and approximately three times more likely to die from accidental poisoning compared to veterans without PTSD. Results were similar when data regarding veterans with PTSD were compared to standard data of men in the United States of similar age and ethnicity, except that mortality risk for digestive diseases were also elevated. The CDC Vietnam Experience Study (1987) also found that the risk for early mortality increased by 17% among Vietnam theater veterans compared to Vietnam era veterans. This effect occurred primarily in the first 5 years

following discharge and could be largely attributed to accidental deaths. The expected increase in mortality from cardiovascular symptoms was not observed.

Studies of Women

A study of mortality risk among 4,600 female Vietnam veterans and 5,300 female veterans who did not serve in Vietnam suggests that this issue is complex (Thomas, Kang, & Dalager, 1991). All-cause mortality rates did not differ between the Vietnam and era veterans. Both Vietnam and non-Vietnam veterans were less at risk for all-cause mortality (standardized mortality ratio [SMR] = 0.82 and 0.88, respectively), when compared to rates for U.S. women. This effect was primarily accounted for by a lower likelihood of death from circulatory disease. However, the effect for external causes of death was similar to that for male veterans. There was a small effect for increased mortality from external causes among female Vietnam veterans compared with non-Vietnam veterans (risk ratio = 1.33), primarily due to an excess of motor vehicle accidents (risk ratio = 3.19), although suicide rates were similar in both groups. The most pronounced effect was for cancers. Although rates for Vietnam veterans were similar to those among non-Vietnam veterans for all cancers, Vietnam veterans had twice the risk for mortality from cancers of the pancreas and uterine corpus compared with non-Vietnam veterans. Vietnam veterans also had significantly elevated rates of mortality from cancers of the pancreas (5 deaths, SMR = 3.27) and uterine corpus (4 deaths, SMR = 4.05) compared to U.S. women.

Discussion

The premature all-cause mortality associated with trauma, and potentially with PTSD, among both men and women attests to the profound impact of trauma exposure on health status. The Sibai et al. (2000) study found different types of exposure related to mortality among men and women. In this study, women, who are thought to be more relationship-oriented than men, were affected by loss-related trauma in ways that men were not. These results suggest that one of the ways gender may moderate the exposure–health relationship is through the process of appraisal and the construction of meaning.

Only one study has addressed PTSD and mortality, and we know very little about this relationship in both men and women. However, the presence of a psychiatric diagnosis has been linked to premature death (Black, 1998). Although fewer studies have examined mortality related to a specific disorder, studies of major depression also suggest that there is a risk for early mortality, similar to results from the PTSD study, related to suicide, accidents, and cardiovascular disease (Wulsin, Vaillant, & Wells, 1999).

Though mortality research is difficult to conduct, additional data will be informative regarding any specific effects of PTSD in men and women.

The subsequent literature review concerning PTSD and self-reported health can inform our understanding of the unique role that PTSD may play in health problems following trauma exposure among women and men.

PTSD AND SELF-REPORTED PHYSICAL SYMPTOMS

Studies Comparing Men and Women

Two sets of archival analyses on the NVRSS data inform hypotheses regarding gender. Taft et al. (1999) conducted a reanalysis of the NVRSS data using path analysis. They demonstrated that PTSD is related to a greater number of self-reported health conditions for both men and women. PTSD was also related to poorer functional status in both men and women. For men, both PTSD and the number of reported health conditions exerted independent effects on functional status, but for women, the number of physical health conditions alone accounted for the relationship between PTSD and functional status. These results suggest that PTSD may have an independent effect on functional status for men but affects women primarily via effects on health status.

Zatzick et al. (1997a, 1997b) performed separate archival analyses on the male and female subgroups from the NVVRS. In analyses of a subsample of 1,200 men, they found that PTSD was associated with poor functional outcomes such as physical limitations, fair or poor physical health, diminished well-being, and unemployment. This relationship persisted even when psychiatric comorbidity and an indicator of the graded severity of chronic illness were included in the model (Zatzick et al., 1997b). Analyses of 432 women from the NVVRS revealed similar results (Zatzick et al., 1997a). PTSD was associated with poorer self-rated health, more physical limitations, increased days in bed, and unemployment, after controlling for psychiatric comorbidity and an indicator of the graded severity of chronic illness.

A recent prospective study of 2,302 Gulf War veterans examined self-reported health in men and women assessed 18–24 months after return. Women reported more health problems than men, specifically, headaches, aches and pains, upset stomach, and dizziness. PTSD was predictive of physical health problems after controlling for demographic variables, exposure, and the baseline measures of physical health problems. Notably, the interaction between gender and PTSD symptoms was nonsignificant in the prediction of physical health problems, indicating no gender differences in the impact of PTSD symptoms on health problems (Wagner, Wolfe, Rotnitsky, Proctor, & Erickson, 2000).

Studies of Men

Most studies of men focused on veteran samples. For example, the Normative Aging Study of 1,079 male veterans from World War II and the Korean War found that men who had experienced both combat- and non-combat-related trauma reported more physical symptoms than those who had no trauma or a single type of trauma (Schnurr, Spiro, Aldwin, & Stukel, 1998). Furthermore, the doubly exposed combat and noncombat trauma group suffered more PTSD than any of the other groups, which the authors suggest indicates a possible mediational role for PTSD in relation to physical symptoms reporting, although it was not possible to test this directly. Many studies of male veterans and civilians have found PTSD to be associated with increased reports of a wide variety of physical symptoms among populations exposed to multiple types of trauma. The association between a diagnosis of PTSD and increased reports of physical symptoms has also been demonstrated in smaller Veteran samples from the United States, Israel, New Zealand, and Canada (Beckham et al., 1998; Litz, Keane, Marx, & Monaco, 1992; Ohry et al., 1994; Shalev et al., 1990b; Stretch, 1991). Similarly, in a sample of German firefighters, those with PTSD report more physical symptoms and poorer functional status than firefighters without PTSD (Wagner, Heinrichs, & Ehlert, 1998).

Studies of Women

Although fewer studies of women have included measures of PTSD, the bulk of data concerning trauma exposure and self-reported health among civilian populations has been conducted with women. The self-reported health and PTSD research in women is focused on two groups: female veterans and sexual assault victims. The female veteran samples do not preclude sexual assault; in fact, sexual assault and harassment constitute a frequently reported traumatic stressor in this sample (Wolfe et al., 1998).

Studies of female veterans have found that a diagnosis of PTSD is linked to increased reporting of heterogeneous physical symptoms and poorer self-rated health (Kimerling, Clum, & Wolfe, 2000; Wolfe et al., 1994). The association appears to persist even when the effects of depression and health risk behaviors are controlled. In the study by Wolfe et al. (1994), the relationship between PTSD and self-reported health was examined in a sample of 109 non-treatment-seeking female veterans of the Vietnam War. The investigators found that PTSD appeared to mediate partially the relationship between trauma and worsened self-reported health.

The sexual assault literature is generally consistent with the veteran literature. Investigators examined the role of depressive symptoms in the association between PTSD and physical symptoms reporting among a sample of 57 college women who had experienced sexual assault (Clum, Calhoun,

& Kimerling, 2000). Depression, PTSD, victimization history, assault severity, and physical reactions during the assault were examined. When all other factors were controlled, both depression and PTSD symptoms independently predicted reports of physical symptoms and perceived health status. When reproductive health symptoms were specifically examined, only PTSD was a significant predictor above and beyond other variables. In a group of women with chronic sexual assault-related PTSD, investigators examined the effects of negative life events, anger, depression and PTSD severity on physical symptom reports. In these data, only PTSD severity independently predicted health symptoms when all other factors were controlled (Zoellner, Goodwin, & Foa, 2000).

Discussion

These data consistently support a relationship between self-reported health and PTSD across both genders and serve as a complement to research examining morbidity. In studies comparing men and women, there appear to be few gender-based differences in the relationship between PTSD and self-reported health indices. One limitation is that the available studies are limited to veteran samples and may not be representative. The differences observed in self-report of physical symptoms between men and women in the general population may not extend to veteran populations, even those without exposure to trauma. While there is some evidence that when compared to men, women may report some physical symptoms at increased rates, female gender does not appear to moderate the relationship between PTSD and self-reported physical symptoms. The link between PTSD and increased reports of a variety of physical symptoms appears to be similar for both men and women.

TRAUMA AND SELF-REPORTED HEALTH

Studies Comparing Men and Women

The interaction among gender, race, and sexual assault has been examined in relation to the self-report of headache (Golding, 1999). Data from the Los Angeles and North Carolina sites of the Epidemiologic Catchment Area survey (ECA), a five-site cooperative study of a representative sample of U.S. residents that included data on mental health diagnoses (excluding PTSD), traumatic events, and health status (Eaton & Kessler, 1985), the National Study of Health and Life Experiences of Women (NHLES), a representative sample of U.S. women age 21 and over (Wilsnack, Wilsnack, & Klassen, 1986), the Adolescent Health Risk Study (AHRS), a sample of 13- to 18-year-old individuals from the New York area (Cooper, Peirce, & Huselid, 1994), and the Puerto Rico Methodologic Catchment Area Study

(PR-MECA), a subset of the larger MECA investigation of psychiatric issues among children ages 9–18 years were combined for these analyses. When controlling for gender and ethnicity, a history of sexual assault was associated with a greater likelihood of reported headaches. However, when the effects of gender and ethnicity were examined, results suggested an interaction between gender and ethnicity. Although there was no difference in association between sexual assault and headache for Latino men versus Latina women, there was a difference among whites. White men were more likely to have an association between headache and sexual assault than white women. This study is important in that instead of controlling for demographic factors such as ethnicity, ethnicity was used to add specificity to the relationship between trauma and health. Although significant statistical power is required to conduct such analyses, the large body of literature suggesting racial/ethnic and socioeconomic disparities in health status in the United States suggests that these types of inquiries may lead to informative results.

Gender did not appear to be an important factor in a study of men and women interviewed before and after a severe flood. Results suggested that more severe disaster exposure was linked to an increase in a variety of self-reported symptoms 18 months after the flood. Investigators who assessed for an interaction between physical symptoms and gender found that flood-exposed women were no more likely to report an increase in symptoms than flood-exposed men (Phifer, 1990).

The relationship between childhood abuse, self-reported health, and self-reported physical symptoms was investigated in a sample of 275 undergraduates. Approximately equal percentages of men and women reported abuse histories, although the type of abuse was different based on gender. Women had a higher preponderance of sexual abuse, whereas men experienced more physical abuse. Students with an abuse history, regardless of type of abuse, reported more physical symptoms measured as abdominal and cold symptoms than nonabused students (Salmon & Calderbank, 1996). No gender differences emerged.

Studies of Men and Women

Several well-designed studies have included both men and women in their samples. Although researchers have not analyzed the data by gender, their results are similar to those found in samples comparing men and women. The ECA data indicate that among a community sample of men and women, exposure to trauma was associated with increased reports of physical symptoms and poorer self-rated health (Ullman & Siegel, 1996). A prospective study of community residents exposed to a natural disaster in Puerto Rico found that the extent of disaster exposure was correlated with the severity of reports of physical symptoms, most notably, gastrointestinal

and pseudoneurological symptoms (Escobar, Canino, Rubio-Stipec, & Bravo, 1992). The association between trauma and health status appears to extend to individuals of low socioeconomic status. A community sample of 1,128 male and female veterans explored the association between lifetime trauma and physical symptoms. The results were consistent with those of studies showing a stronger relationship between multiple trauma experiences and health status. Data revealed that most traumatic events occurred prior to military service. Furthermore, it was the lifetime accumulated trauma, whether trauma to self, sexual assault, or both, that predicted the number of physical symptoms reported (Martin, Rosen, Durand, Knudson, & Stretch, 2000).

Studies of Men

Studies of male veterans have documented long-term increases in physical symptom reports in association with trauma exposure. A study of World War II veterans from the Stanford–Terman data archives revealed an association between combat exposure and long-term self-reported health. During the 15 years following the war, those men exposed to combat were more likely to experience death or a decline in self-reported physical health than men with no combat exposure. This association remained despite controls for self-reported health immediately following the war (1945), rank, and theater status (Elder, Shanahan, & Clipp, 1997).

Studies of Women

Many of the large-scale, well-controlled studies of trauma exposure and health outcomes in women have been driven by a priori notions of a relationship between sexual assault and reproductive health symptoms. Though the results support this relationship, the dearth of studies investigating both cumulative trauma exposure among women and a range of health outcomes has led many researchers to interpret these results as suggesting a specific relationship between sexual assault and reproductive health. In light of the findings discussed earlier, we urge caution in adopting this interpretation.

Epidemiological data from the general adult population of the United States suggests that individuals exposed to one or more traumatic events over the lifetime report more physical symptoms and a greater number of chronic health conditions than do individuals not exposed to traumatic events. These studies account for the role of age, ethnicity, and socioeconomic status in the relationship between trauma exposure and health, but can account for gender to a lesser extent, because the majority of data from community samples are obtained only from women.

Data from selected ECA study sites have been analyzed specifically to

examine relationships between sexual assault history and self-reported health among women. Results suggest that compared to women with no assault history, women who had been sexually assaulted are more likely to report health symptoms across a variety of organ systems and report poorer self-rated health (Golding, 1994). Other reanalyses of these data have documented associations between sexual assault and reproductive health symptoms, indicating that women who have experienced sexual assault report more reproductive health symptoms, such as excessive pain, painful intercourse, lack of sexual pleasure, irregular menstruation, and excessive bleeding (Golding, 1996). These data were combined with NHLES data, and analyses suggested that women who report gynecological symptoms (e.g., pain during menstruation, excessive bleeding, or sexual dysfunction) in their reproductive years are more likely to report a history of sexual assault than women without these symptoms, and that this association is consistent across demographic characteristics (Golding, Wilsnack, & Learman, 1998). These studies of sexual assault did not account for other types of trauma exposure. Because it is such a frequent form of traumatic exposure for women, sexual assault serves as a proxy for trauma exposure in these studies.

Other studies that include broader assessments of trauma exposure and physical symptoms suggest a more general relationship between the two. Among a diverse group of women HMO subscribers, victims of interpersonal violence reported poorer self-rated health status than did nonvictims (Koss, Woodruff, & Koss, 1990). In a longitudinal study, sexual assault victims recruited from an urban rape treatment center reported more physical symptoms over a variety of domains than did a demographically matched comparison group of nonassaulted women in a 1-year period, even when injuries sustained in the assault were excluded from analyses (Kimerling & Calhoun, 1994). Studies of treatment-seeking samples reveal associations between different types of trauma exposure and increased reports of a variety of physical symptoms. A study of 1,931 women sampled from multiple primary care clinics found that lifetime exposure to interpersonal violence was associated with increased physical symptom reporting, and that greater severity of exposure was linked to a greater number of physical symptoms (McCauley, Kern, Kolodner, Derogatis, & Bass, 1998). These analyses controlled for the effects of socioeconomic status on health outcomes.

Discussion

Data on self-reported physical symptoms suggest that women and men may be more similar than different. In contrast to data from the general population, among trauma populations women do not appear to report a greater

number or severity of physical symptoms. These results suggest that exposure to trauma may attenuate some gender differences. For example, the gender disparities in rates of depression observed in the general population are not observed among trauma populations (see Orsillo et al., Chapter 8, this volume). Both men and women report a heterogeneous group of physical symptoms following trauma exposure. Of note is the lack of evidence for a specific relationship between sexual assault and reproductive health symptoms. Although the data on women reviewed thus far clearly indicate that trauma and PTSD have a negative impact on reproductive health, the stressors that elicit these symptoms do not seem to be limited to sexual trauma. As noted in other reviews in this volume, sexual assault, more common in women than men, is associated with a greater risk for PTSD than many other traumatic events. Thus, findings related to sexual assault may be better interpreted by viewing sexual assault as a proxy for severe trauma or PTSD risk. Other studies cited in this section (Martin et al., 2000; Schnurr et al., 1998) suggest that cumulative exposure over the lifetime may best predict symptom reports.

The studies reviewed here provide compelling evidence for associations of trauma and PTSD with health impairment over a variety of domains. Individuals exposed to trauma or diagnosed with PTSD appear to suffer premature mortality and an excess of medical conditions common to adults, and to report more physical symptoms. In general, these studies suggest that gender issues pertain more to the manner in which these studies are conducted than to differences between men and women in health outcomes. In other words, current research yields much data regarding sexual trauma and interpersonal violence in relation to self-reported health in populations of women, yet little data concerning PTSD or medical morbidity. Although more data has addressed objective health indicators and PTSD among males, little research has focused specifically on civilian populations of males and on non-combat-related trauma and PTSD. However, existing data suggest that these areas of research are important to our understanding of health outcomes for both women and men. This review suggests that the relationship between gender and health status observed in the general population may manifest differently among trauma populations. Therefore, researchers and clinicians must not allow a priori notions regarding gender and health status to shape PTSD research and treatment without sufficient empirical support. The following section further examines gender issues in the construction of research questions and health outcomes associated with trauma and PTSD with respect to specific health conditions that have received much research attention. In contrast to the previous sections, which have investigated health status among trauma-exposed populations, these studies have investigated the prevalence of trauma or PTSD among individuals seeking treatment for, or diagnosed with, a specific medical condition.

SPECIFIC DISEASE STATES

Several investigations have examined the prevalence of trauma or PTSD among individuals diagnosed with specific disease states in an effort to better understand psychosocial or behavioral contributions to etiology and course of disease. Considerable data exist regarding pain disorders, gastrointestinal disorders, and sexually transmitted infectious diseases (STDs), including HIV. In the following sections, we review the literature pertaining to each of these disorders. Conducting research with individuals diagnosed with a particular medical disorder is a challenging task. Several methodological issues must be addressed to allow accurate interpretation of results, and special attention should be directed to sampling strategies and assessment methods. The majority of the studies cited in the following sections have sampled patients from specialty medical clinics. A high prevalence of traumatic events among individuals seeking treatment for a given medical disorder does not necessarily indicate that exposure is associated with the likelihood of the medical condition. When research participants are sampled from treatment-seeking populations in specialty medical clinics, high rates of trauma exposure may indicate that these individuals are simply more likely to come to medical attention or to seek specialty care. Many of these studies focus on childhood sexual and physical abuse. Although childhood trauma clearly is associated with a range of deleterious outcomes, the studies reviewed in early sections of this chapter suggest that other adverse childhood experiences, as well as trauma occurring later in life, are also important determinants of adult health status. If only specific trauma events such as childhood sexual abuse are queried, then associations with health outcomes might appear specific to sexual abuse. However, because childhood sexual abuse frequently occurs in the context of other stressful and traumatic life events, and is associated with an increased risk for interpersonal violence in adulthood, statistical associations of health outcomes with childhood sexual abuse may be a proxy for a more general relationship between trauma exposure and health outcomes. Finally, because many of these studies are conducted with samples of either women or men, where effects of gender are not tested, or with samples of women alone, associations between trauma and health outcomes primarily among women appear to be pathological manifestations of trauma occurring without sufficient substantiation. The available research is discussed through the lens of gender, both in terms of the interpretation of the data and in the resulting manner in which these disease states are conceptualized by practitioners.

Gastrointestinal Disorders

Researchers have categorized gastrointestinal (GI) disorders into two types of diagnoses: structural/organic and functional disorders (Drossman, Li,

Leserman, Toomey, & Hu, 1996). Structural, or organic, GI diseases are associated with an identifiable organic pathology. Some of the more common organic diagnoses include Crohn's disease, ulcerative colitis, liver disease, or acid peptic disease. Functional GI disorders are diseases without clearly identified structural or biochemical etiology, including irritable bowel syndrome (IBS), nonulcer dyspepsia, and chronic functional abdominal pain. These conditions are thought to be general dysfunctions of the GI tract; it is suggested that individuals may have a particularly reactive colon that is easily triggered by stress or diet. These conditions have received particular research attention in an effort to establish a psychological component for cases in which an organic basis for the disorder is not apparent.

Estimates of the prevalence of childhood sexual or physical abuse among GI patients range from 31 to 56% and suggest that physical and sexual abuse are highly correlated in this population (Drossman et al., 1990; Scarinci, McDonald-Haile, Bradley, & Richter, 1994). Patients with abuse histories are more likely to receive functional as opposed to organic diagnoses (Drossman et al., 1990). GI clinic patients with abuse histories appear to have poorer functional status, more severe symptoms, and greater pain severity than their nonabused counterparts (Drossman et al., 1996). These patients also report more physical symptoms over a number of domains, including those related to musculoskeletal and genitourinary disorders, skin disturbance, respiratory illness, and pain (Drossman et al., 1990; Leserman, Li, Drossman, & Hu, 1998).

These data, collected primarily from samples of women, suggest that childhood sexual and physical abuse is overrepresented among individuals with GI disorders. However, a careful reading of this literature—with attention to both research methodology and gender—suggests that traumatic exposure may not be related to the presence or absence of the disorders, but is associated with a greater frequency of unexplained symptoms, functional impairment, and an increased likelihood of seeking specialty care (Drossman, 1995).

A multicenter study of men and women sampled from several health care settings in France proposed that patients with IBS are more likely to have suffered abuse or assault than several other groups of medical patients (Delvaux, Denis, & Allemand, 1997). Patients seeking treatment in GI clinics and diagnosed with IBS were compared to (1) patients seeking follow-up treatment for structural GI disorders, (2) patients seeking specialty treatment in opthamology, and (3) healthy patients seen for routine primary care. The investigators used a wide definition of sexual abuse that included verbal aggression. The study cited high rates of sexual abuse: 36% among IBS patients, significantly more than patients any other group (14% of follow-up GI patients, 13% of opthamology clinic patients, and 8% of primary care patients). Similar to other studies, sexual abuse was more often found among women than men patients. The authors conclude that child-

hood abuse may be particularly prevalent among IBS patients; however, the nonequivalence of the comparison groups in this study, and the nontraditional definition for sexual abuse, suggest interpretating these data with caution.

In fact, research conducted with 1,264 male and female patients in conjunction with routine HMO physical exams, suggests that some of the unexplained and/or functional GI symptoms observed in patients with trauma histories may be an artifact of the more general increased reports of physical symptoms observed in trauma-exposed men and women (Longstreth & Wolde-Tsadik, 1993). Reports of sexual abuse were associated with both GI and non-GI physical symptoms. Individuals who reported GI symptoms consistent with a diagnosis of IBS were also more likely to report a greater number of non-GI physical symptoms, a history of sexual abuse, and substance use. This relationship between trauma exposure and GI symptoms does not appear to be specific: Although severity of trauma exposure is associated with poorer outcomes for GI patients, outcomes depend on type of exposure (e.g., physical vs. sexual abuse) and whether exposure occurred during childhood compared to adulthood (Leserman, Drossman, Li, & Toomey, 1996).

Talley, Sara, Zinsmeister, and Melton (1994) surveyed a representative community sample of 919 men and women ages 40–49 in Minnesota to examine the association between trauma exposure and functional GI disorders such as IBS, heartburn, and dyspepsia. The investigators assessed lifetime history of sexual, physical, and emotional abuse. Forty-one percent of women and 11% of men reported a lifetime history of any abuse. Women were more than four times more likely to have been sexually abused, and more than five times as likely to have been physically abused as men in the sample. Significant cross-sectional associations were found between exposure to abuse and IBS, dyspepsia, and heartburn. Gender comparisons indicated that women were more likely to suffer from both IBS and dyspepsia, whereas men were more likely to suffer from heartburn. Thus, investigations limited to IBS or specific types of GI disorders may bias results, so that trauma exposure appears more associated with health outcomes among either women or men, depending on the particular disorder identified.

Although few studies have investigated PTSD among individuals diagnosed with GI disorders, such studies are potentially informative. These studies shift the focus for disease risk from a priori notions regarding specific types of trauma exposure, such as sexual abuse, to traumatic stress reactions. In a study of men and women seeking treatment for IBS, approximately 36% of the sample met criteria for a PTSD diagnosis that preceded the onset of IBS (Irwin et al., 1996). This prevalence rate, considerably higher than that found in the general population, suggests that further research with PTSD may enhance our understanding of the role of trauma in GI disorders.

Pain

PTSD is a common diagnosis among chronic pain patients. Among a sample of men and women seeking treatment for fibromyalgia, 56% met criteria for PTSD (Sherman, Turk, & Okifuji, 2000). In a sample of male veterans in outpatient care for PTSD, 80% reported a chronic musculoskeletal pain condition (Beckham et al., 1997). Results such as these have prompted investigators to consider a relationship between traumatic stress and pain disorders. Well-controlled studies that investigate potential mechanisms of a trauma–pain relationship among both men and women are needed to understand this relationship. Traumatic events in childhood have been observed among both men and women with chronic pain disorders in a variety of locations (Goldberg, 1994); however, much of the literature in this area has focused on a specific relationship between child sexual abuse and chronic pelvic pain in women.

Pelvic pain is common among women seeking gynecological treatment and is considered by clinicians to have a considerable psychosocial component (Fry, Crisp, & Beard, 1997). Researchers have observed high rates of childhood sexual abuse among women undergoing diagnostic laparoscopy for chronic pelvic pain compared to women undergoing the same procedure for fertility-related issues (Harrop-Griffiths et al., 1988; Walker et al., 1988). Other researchers have used categories of organic and idiopathic chronic pelvic pain to distinguish cases for which a medical basis for the complaints is easily diagnosed. These studies have found higher rates of sexual abuse in women with undiagnosed pelvic pain (Reiter & Gambone, 1990; Reiter, Shakerin, Gambone, & Milburn, 1991) than in women with readily identified organic bases for pain. Conversely, another study found that physical abuse, but not sexual abuse, was overrepresented among women presenting with chronic pelvic pain (Rapkin, Kames, Darke, Stampler, & Naliboff, 1990). The sexual trauma studies, however, have been interpreted by some researchers as consistent with widespread a priori psychodynamic explanations for the link between early sexual trauma and nonorganic pelvic pain. This hypothesis is prevalent in the clinical literature (Rosenthal, 1993). However, it is our opinion that this interpretation of the data is imprecise and pathologizes women medical patients.

Research that includes assessment of other pain disorders, lifetime trauma histories, and samples of both men and women provides support for a more general relationship between trauma exposure and pain. Among women sampled from primary care facilities, sexual trauma occurring in both childhood and adulthood was correlated not only with pelvic pain but also with a variety of other pain complaints (Jamieson & Steege, 1997). When women with chronic pelvic pain are compared to women seeking treatment for headache, both groups are more likely to report lifetime histories of sexual trauma than pain-free women (Walling et al., 1994). In a

study of 426 male and female college students, sexual and physical abuse were both associated with reports of more severe pain symptoms and with pain in a greater number of body sites when compared to nonabused respondents (Fillingim, Wilkinson, & Powell, 1999). One study examined lifetime trauma history and pain severity using validated questionnaires with men and women seeking outpatient treatment for chronic pain (Spertus, Burns, Glenn, Lofland, & McCracken, 1999). Men and women reported comparable levels of trauma over the lifetime, with the exception of sexual assault, which was more prevalent among women (21.6% vs. 2.8% for childhood, and 25% vs. 2.8% for adulthood). Trauma-exposed patients reported more pain-related affective distress than nonexposed patients. Gender comparisons revealed that this effect was more pronounced among men than women. Furthermore, post hoc analyses revealed that even when controlling for sexual and physical assault, the general relationship between exposure and poor emotional adjustment to pain remained significant. The authors note that a gender bias in research limited to female samples and specific types of trauma may result in a lack of clear clinical conceptualization for the relationship between trauma exposure and pain syndromes among both men and women.

Sexually Transmitted Diseases

Gender issues have been a central factor in the investigation of the relationship among trauma exposure, PTSD, and STDs. Several studies have established a history of interpersonal violence among men and women with STDs, with a focus on HIV infection. One study of HIV-infected women estimated the lifetime rate of sexual assault at 43% (Zierler, Witbeck, & Mayer, 1996). A study of inner-city, low-income women, 88 of whom were infected with HIV, and a comparison group of 148 noninfected women investigated rates of exposure to interpersonal violence that met DSM-IV Criterion A for PTSD (Kimerling, Armistead, & Forehand, 1999). Whereas 66% of the HIV group were exposed to violence, rates in the comparison group were 40%. Although the difference between groups was statistically significant, both groups of women reported considerable exposure to violence. A follow-up study of PTSD among the women infected with HIV revealed that 35% of trauma-exposed women met full criteria for the disorder (Kimerling, Calhoun, et al., 1999). A cohort study of 168 men and women with HIV, and at risk for HIV, found that approximately 50% of the women and 20% of men reported lifetime rape (Zierler et al., 1991). Both men and women who had been raped were more likely to be infected with HIV than nonassaulted men and women. Men who reported rape in childhood were twice as likely to be infected with HIV than nonassaulted men. In a large national survey of male veterans, men diagnosed with both PTSD and

substance abuse were approximately 12 times more likely to be infected with HIV than veterans without either diagnosis (Hoff, Beam-Goulet, & Rosenheck, 1997). Preliminary data suggest that PTSD may impact course of disease as well as risk for infection. In the Kimerling, Calhoun, et al. study (1999), for women diagnosed with PTSD, the disease progressed more rapidly than in women without PTSD, as indicated by rate of CD4/CD8 cell decline and number of opportunistic infections.

Clearly, trauma and PTSD are important issues among individuals with HIV. Although exposure to violence often occurs following infection with HIV (Zierler, 2001), researchers have proposed plausible behavioral mechanisms where trauma exposure serves as a risk factor for infection with STD, specifically, HIV infection. Violence can be linked to HIV and other STDs though several pathways. Most directly, sexual assault can result in STD for both men and women if the perpetrator is infected (Gostin et al., 1994; Holmes, 1999; Kobernick, Seifert, & Sanders, 1985). Other researchers have noted that intimate partner violence may contribute to the likelihood of STDs and HIV. In a sample of 165 ethnic minority, low-income women, researchers found that partners in violent relationships were less likely to use condoms, and that reported physical and verbal abuse, and threats of abuse as a result of initiating discussions about condom use (Wingood & DiClemente, 1997). Similarly, among a group of women who met geographic and demographic risk criteria for HIV infection, 42% reported engaging in unprotected and unwanted sexual activity as a result of force or threats of force (Kalichman, Williams, Cherry, Belcher, & Nachimson, 1998). There were high rates of intimate partner violence among these women, who also reported fears of violence as a result of requesting condom use by their male partners. Recent qualitative data suggest that among men who have sex with men, childhood sexual abuse may also be similarly linked to unwanted and unprotected sexual activity and relationship violence (Paul, Catania, Pollack, & Stall, 2001).

Studies of men with PTSD, reviewed in earlier sections of this chapter, have found increased rates of non-STDs. Associations between trauma and PTSD with STDs have been primarily found among women and men who have sex with men, and appear to be particularly associated with lifetime exposure to interpersonal violence. For males, childhood abuse may be particularly relevant. These observations have led researchers to focus on shared causal pathways for both interpersonal violence and HIV infection influenced by social inequalities related to gender, minority ethnicity, economic position, and sexual orientation (Zierler & Krieger, 1997). Additional research that further elucidates the role of trauma and PTSD in relation to behavioral risk for STDs might dramatically inform outreach and prevention efforts. For example, attention to violence in the social context of HIV and STDs would expand intervention strategies to address the consequences of violence. Additional data regarding the impact of trauma and

PTSD on functional status and course of disease among HIV-infected individuals could enhance treatment efforts.

CLINICAL IMPLICATIONS

The studies reviewed in this chapter suggest, as a whole, that PTSD is associated with adverse changes in health status. Study samples that represent diverse populations across different points in the lifespan and types of trauma converge, suggesting that PTSD is an important factor in health outcomes. In terms of objective health decrements and PTSD, significantly more evidence is available regarding men than women. The studies documenting objective health changes in men are largely well-controlled studies of male veterans that yield evidence of alterations in multiple body systems, among them arterial, lower GI, dermatological, muskuloskeletal, and EKG abnormalities. These important studies have begun to take into account and control for not only extant factors associated with disease, such as age and poor health behaviors, but also co-occurrence of psychiatric comorbidity. These studies stand in marked contrast to the objective health data available for women and studies that specifically investigate gender differences in health status. To date, no published studies have examined objective indicators of health status among female PTSD populations or addressed the ways women may differ from men in the medical comorbidity with PTSD. Clearly, more studies are required to draw conclusions about sex-specific relationships.

Although more research is needed, existing data have the potential to inform clinical practice substantially. Several important conclusions drawn from this literature review are relevant to the treatment of both women and men:

1. *There is little evidence for a specific relationship between childhood sexual abuse and any medical condition among men or women.* Childhood sexual abuse, a prevalent form of exposure among female trauma populations, is associated with risk for revictimization as an adult and is more prevalent among women than men. As a result, this form of exposure is closely associated with PTSD, which in turn is linked to increased rates of medical morbidity over a variety of domains, poorer functional status, and increased reports of physical symptoms. These phenomena are not a unique pathology of female medical patients, although this may appear to be the case, because females are more likely to experience childhood trauma, to disclose childhood sexual abuse, and to use medical services. However, research indicates that trauma and PTSD are associated with functional impairment and increased physical symptom reports in both women and men, and to a similar extent. Nor is any medical condition pathognomic of child-

hood sexual abuse. A diagnosis of pelvic pain or IBS, for example, does not suggest a trauma history per se. However, trauma exposure should play an important role in the formulation of medical treatment plans, even without a direct etiological role in "functional" disorders.

2. *Men and women with trauma exposure or PTSD experience a greater degree of functional impairment from their illness and evidence a poorer course of disease for a variety of medical conditions.* PTSD, the most common unrecognized anxiety disorder in medical settings (Fifer et al., 1994), has the greatest functional impact on health status among such disorders (Schonfeld et al., 1997). As a result, these patients may appear to have symptoms and impairment beyond what medical practitioners expect for a given illness. The overrepresentation of trauma-exposed men and women in specialty medical settings may be less associated with a pathological somatization of psychological distress than with treatment plans that do not fully account for the range of patients' impairment. Both mental health and medical providers must carefully consider ways in which the pervasive emotional and behavioral effects of trauma may influence patients' ability to adhere with treatment.

3. *Gender differences in health status observed in the general population may not correspond to those observed in trauma populations.* Exposure to trauma or PTSD may attenuate gender disparities in morbidity, mortality, and physical symptom reporting by interfering with the protective factor of gender. Although more objective data are needed, existing data suggest that men and women with PTSD are equally likely to experience poor health in each of these domains. However, men and women may experience different types of morbidity and health conditions. Unfortunately, we currently lack the research to determine whether PTSD hastens the onset of health conditions commonly experienced or is associated with specific pathologies in both men and women. We caution researchers and clinicians to avoid the assumption that specific health problems deserve more or less attention with respect to PTSD without empirical support. For example, PTSD certainly deserves greater attention in the prevention and treatment of STDs and HIV. Conversely, although "functional" GI disorders are investigated with respect to trauma exposure, few data can inform practitioners as to how PTSD may increase risk or affect the course of GI disorders with organic etiology. Some disorders, such as cardiovascular disease, are researched in men but not women. Clinicians should not assume, however, that PTSD does not pose an increased risk for cardiovascular disease among women.

4. *Women's health is an important research and treatment specialty in settings where PTSD populations receive care.* As noted previously, our knowledge of PTSD as it relates to objective indicators of women's health and medical morbidity is greatly lacking. Given that women experience roughly twice the rates of PTSD as men, seek medical treatment at greater

rates than men, and, as discussed previously, appear likely to experience medical morbidity at least at the same rates as men with PTSD, these data are especially important. Large numbers of women with PTSD are treated in medical settings without sufficient research to inform interventions. Research pertaining to PTSD and health may be particularly important in VA and public sector settings, where high rates of PTSD can be expected.

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